Pogonophora from the Northeastern Pacific: First Records from the Gulf of Tehuantepec, Mexico

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Northeastern Pacific records of species of the Phylum Pogonophora Johansson, 1937 are few. In all, eight species have been recorded. The first was by Kirkegaard (1956*a*, 1961) who described *Lamellisabella ivanovi* from the Gulf of Panama. In two successive records, Ivanov (1961, 1962) described *Galathealinum brachiosum,* and *Heptabrachia ctenophora* and *H. canadensis,* respectively, from the west coasts of Canada and Oregon. Hartman (1961) recorded abundant occurrences of *Siboglinum veleronis* Hartman from the La Jolla Canyon off the coast of southern California. Southward (1962) next described *Galathealinum arcticum* from Arctic waters off the northern coast of Yukon, Alaska; and more recently, Cutler (1965) described two new species of *Siboglinum, S. albatrossianum* and *S. ecuadoricum,* and an undetermined specimen, from collections dredged off Cape San Francisco, Ecuador, by the U. S. Fish Commission steamer "Albatross" in 1888.

The occurrences of a few dark-brown, cylindrical collar segments, measuring about 2.9–4.0 mm across, and 3.3 mm long, from West Cortes, East Cortes, and Long Basins, and from the San Diego Trench, were recorded by Hartman and Barnard (1960). These were later referred to the genus *Galathealinum* Kirkegaard, 1956 by Hartman (1961:546), who also mentioned a new record of another species of *Siboglinum* closely resembling *S. veleronis* from "Velero IV" Station 7231, off San Eugenio Point, Lower California, Mexico.

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MATERIAL STUDIED

The new species, *Galathealinum mexicanum* sp. nov., described below is the fourth species to be described in the genus *Galathealinum.* It was dredged by the Vermillion Sea Expedition (1958) from a depth of 3531–3603 m in the Gulf of Tehuantepec, Mexico (Univ. Calif. Mus. Paleo. locality B-7469). It is the first pogonophoran record from the Gulf of Tehuantepec.

Only the dried remains of the tubes are preserved. These dark brown tubes are thick-walled and rigid, and have preserved their true cylindrical shape. They taper slightly and uniformly, have an average diameter of over 2.0 mm, and are prominently subdivided along the entire length into segments, each about twice as long as the average diameter of the tube. The exterior of the tubes is covered by a thin, feltlike layer composed of fine and coarse fibers. The coarse fibers are more prominent and more numerous near segmental junctions. These characters place this species within the genus *Galathealinum* as defined by Kirkegaard (1956) and Ivanov (1963).

Although most Recent pogonophoran genera and species are established primarily on the

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basis of soft part anatomy, remains of well-preserved tubes are also known to be sufficiently reliable for "specific diagnosis" (see Hartman, 1961:546; Ivanov, 1963:120). The latter author firmly established the validity of this contention by constructing a dichotomous key for the identification of most Recent pogonophoran species from remains of their tubes (Ivanov, 1963:456–461). The characters of the tubes described and figured in this report readily distinguish them from the three previously described species of *Galathealinum*. It is hoped that, in the future, preserved material from the same area will provide data on the nature of the soft part anatomy of the new species.

SYSTEMATIC DESCRIPTION

Phylum POGONOPHORA Johansson, 1937
Order THECANEPHRIA Ivanov, 1955
Family POLYBRACHIIDAE Ivanov, 1952
Genus *Galathealinum* Kirkegaard, 1956

Galathealinum Kirkegaard, 1956, Galathea Rept. 2:79–83.

TYPE SPECIES: *Galathealinum bruuni* Kirkegaard.

Galathealinum mexicanum sp. nov.
Figs. 1–7

DIAGNOSIS: *Galathealinum* with elongate, cylindrical, segmented tube; circular cross-sectional outline; average tube diameter 2.0–2.5 mm; covered along entire length by thin, feltlike layer of fine and coarse fibers; individual coarse fibers at segmental junction about 15–22μ thick; segment length approximately twice the diameter.

DESCRIPTION: This species is represented by fragments of dried tubes only. The tubes are brownish-gray to dark-gray, elongate and slender. The longest fragment (holotype, Fig. 1) is 147.5 mm long. Maximum diameter 2.5 mm, minimum diameter 1.96 mm. Externally, the tube is divided into numerous prominent segments (see Figs. 1–6). These segments have a circular cross-sectional outline and are of rather uniform length, each measuring 3.8–4.9 mm. The widened funnel-like frills that are prominently shown at the nodes of the described

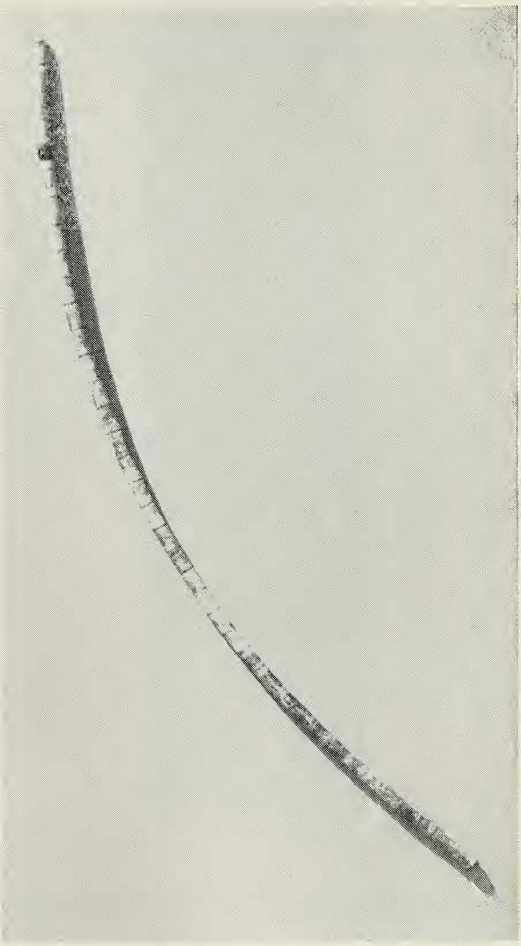

FIG. 1. *Galathealinum mexicanum* Adegoke sp. nov. Tubes from Univ. Calif. Mus. Paleo. locality B-7469, Gulf of Tehuantepec, Mexico. Holotype, UCMP 32882. Entire specimen showing long, curved, segmented tube, × ¾.

species of *Galathealinum* are only poorly preserved on the dried tubes of the present species (Figs. 3, 7). The coarse fibers generally associated with these frills are well developed, however, and are more abundant at the nodes than in the much longer internodes. The exterior of the tube is coated by a thin, friable, feltlike layer, mostly composed of numerous, very fine, light-brown fibers, and few, coarse, reddish-brown, glistening fibers. The latter also penetrate the tube wall and appear as faint ridges on the otherwise smooth interior surface. About 60–80 coarse fibers are present in each internode. Though essentially transverse, they are

FIG. 2. *Galathealinum mexicanum* Adegoke sp. nov. Paratype, UCMP 12155. Anterior region of paratype showing well-defined segments, coarse transverse fibers, and some encrusting calcareous annelid tubes, × 1.7.

rather irregularly oriented, and a few are even confluent. The interior wall is a glossy, dark-brown color, and is devoid of the feltlike layer. Both the extreme anterior and posterior ends of the tubes are unknown.

DIMENSIONS: Holotype: length 147.5 mm, diameter of wider anterior end 2.5 mm, diameter of smaller posterior end 2.2 mm, average length of segments 4.0 mm, thickness of wall 0.1 mm, thickness of coarse fibers 15–22μ. Paratype: length 77.5 mm, diameter of wider anterior end 2.4 mm, diameter of posterior end 1.96 mm, average length of segments 4.5 mm, thickness of wall about 0.1 mm, thickness of coarse fibers 15–22μ.

HOLOTYPE: Univ. Calif. Mus. Paleo, no. 32882, locality B-7469.

PARATYPE: UCMP no. 12155, from type locality.

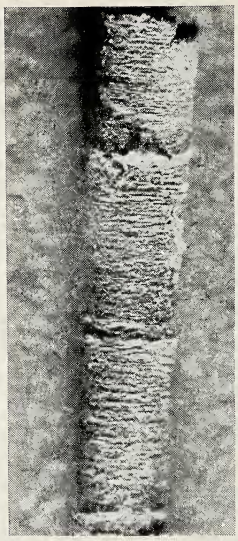

FIG. 3. *Galathealinum mexicanum* Adegoke sp. nov. Anterior end of holotype showing a few segments with coarse fibers and remnants of segmental frills at the nodes, × 5.

FIG. 4. *Galathealinum mexicanum* Adegoke sp. nov. Part of holotype enlarged to show irregular coarse fibers, × 5.

OCCURRENCE: UCMP locality B-7469. Few tubes and some echinoids dredged by the Vermillion Sea Expedition S.I.O., from the Gulf of Tehuantepec, Mexico. Latitude 14°28′N to 14° 29′N. Longitude 93° 09′W to 93° 10′W. Depth 1,935–1,974 fathoms. Field no. P-128-58.

REMARKS: *Galathealinum mexicanum* sp. nov. resembles other described species of *Galathealinum* in the possession of a dark-brown, segmented tube covered externally by a thin, friable, feltlike layer. Its dimensions are closest to

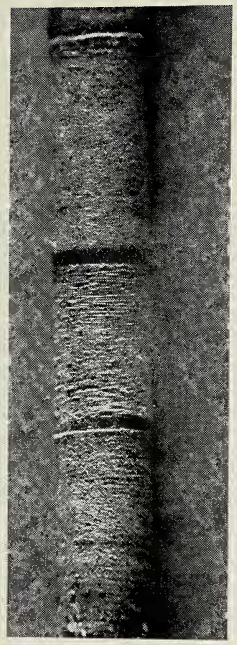

FIG. 5. *Galathealinum mexicanum* Adegoke sp. nov. Part of paratype enlarged to show coarse fibers and details of constricted segmental junctions, × 5.

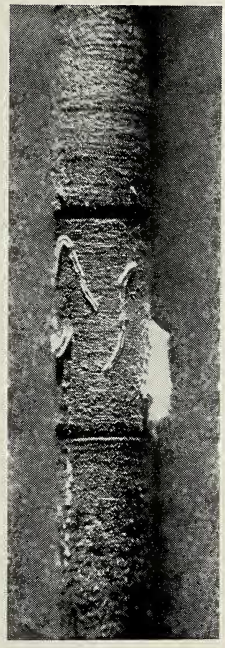

FIG. 6. *Galathealinum mexicanum* Adegoke sp. nov. Part of paratype enlarged to show three encrusting annelid tubes, × 5.

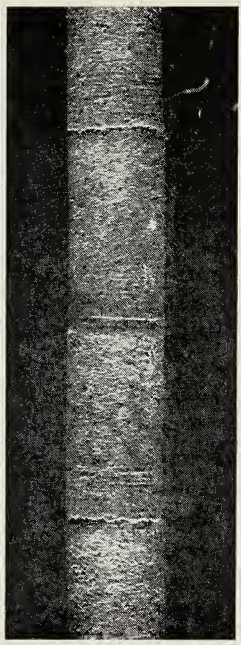

FIG. 7. *Galathealinum mexicanum* Adegoke sp. nov. Part of paratype enlarged to show details of segmental junction and remnants of segmental frills at nodes.

those of *G. brachiosum* Ivanov, whose diameter ranges from 2.0 to 2.6 mm, from which it may be readily distinguished by the longer segments (about 4.0 mm long as against 1 mm in *G. brachiosum*; see Ivanov, 1963: Fig. E162). Moreover, the coarse fibers in the new species measure 15–22μ, whereas they are 7–12μ thick in *G. brachiosum*.

From *G. bruuni* Kirkegaard, the new species may be distinguished by its larger dimensions, relatively weaker segmental frills, and thicker, coarser fibers (2–4μ thick in *G. brunni*).

The new species may be readily distinguished from *G. arcticum* Southward by its larger diameter (1.33–1.95 mm in the latter); larger length-diameter ratio of each segment, which is about 2 in the new species and 1 in *G. arcticum*; and the thicker coarse fibers, which are only 1–2μ thick in *G. arcticum*.

The longest fragment represented in the collection is 147.5 mm long. As the extreme anterior and posterior ends of this tube are not represented, and because of the rather minor variation in taper between the two ends (anterior diameter 2.5 mm, posterior diameter 2.2

mm), it is here suggested that the total actual length of the tube may be several times the length of this fragment.

Segmental funnel-like frills, a common characteristic of the genus, are only weakly represented here (Figs. 3, 7). According to Ivanov (1963:412), these frills are soft and pliant in *G. brachiosum* and consist entirely of the external fibrous layer. It is, therefore, easily conceivable that these frills, originally present on this new species, became shrunken and inconspicuous because of the poor conditions of preservation of the tubes. The marked concentration of irregularly oriented coarse fibers in the vicinity of each segmental junction (see Figs. 3, 4) supports this contention.

Pogonophoran tubes are generally straight. Most of the tubes of this species in the collection studied are also straight (see Fig. 2). A few, however, are curved (see holotype, Fig. 1). This curvature is considered to be a shrinkage phenomenon, as a result of drying.

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